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ISRAEL COOK RUSSELL
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G. K. GILBERT

The subject of this sketch was known to the world as an investigator, explorer, writer, and teacher, in the fields of geology and geography. He was descended from New England stock; his beginnings were simple; his development followed the usual lines of the American professional man; and, apart from his scientific work, the course of his life was not eventful. The end came abruptly, and seemingly at the zenith of his activity.

He was the son of Barnabas and Louisa Sherman (Cook) Russell, and was born near Garratsville, N. Y., on December 10, 1852. His home was at Garrattsville till he was twelve years old and was afterward at Plainfield, N. J. His education included preparatory studies at the Rural High School, Clinton, N. Y., and Hasbrook Institute, Jersey City, a college course at the University of the City of New York (B.S. and C.E., 1872), and a postgraduate course at the Columbia School of Mines.

In 1874 he was a member of the United States Transit of Venus Expedition, visiting New Zealand and Kerguelen Island, and making observations which were the basis of his first publications on natural history. As the arrangements for the expedition made no provision for work in natural history, he sought and obtained an appointment as photographer, qualifying himself therefor by a hurried course of study under Rutherfurd, and incidentally acquiring photographic skill that was afterward of service in physiographic and exploratory work. On his return he became assistant professor of geology in the School of Mines, where he remained two years. In 1878 he accompanied Professor J. J. Stevenson in geologic exploration in New Mexico under the auspices of the Wheeler Survey; and the following year was spent in European travel.

My own association with him began in 1880, when he became a member of the United States Geological Survey and was assigned to my corps—the Division of the Great Basin—then engaged in the study of the Quaternary lake Bonneville. After a year of subsidiary duty he was given independent work, investigating the Quaternary histories of a series of desert basins in northern Nevada and adjacent parts of California and Oregon. To these and cognate studies he gave four years, his results being embodied in an important series of reports, which gave him assured status both in this country and abroad. The duties next assigned him were much less congenial, and I think he always regarded the three years given to them as nearly wasted. They comprised the detailed study and mapping of Paleozoic formations in the southern part of the Appalachian area, and, later, a general investigation of the Jura-Trias formations of the United States. The scope of the latter work was afterward reduced, and he finally reported only on the Newark formation.

The field of research most attractive to him, and the one to which his whole life would doubtless have been devoted, had circumstances favored, was geographic exploration. It was also a field for which he was peculiarly fitted. In 1889 he sought and obtained permission to accompany, as representative of the Geological Survey, an expedition sent by the Coast and Geodetic Survey to establish a portion of the eastern boundary of northern Alaska. He ascended the Yukon River to the neighborhood of the boundary, and then in early winter crossed the mountains southward to the head of Lynn Canal, whence he returned by sea. With continued assistance of the Coast Survey, and under the joint auspices of the Geological Survey and the National Geographic Society, he spent the two succeeding summers in exploring the slopes of Mount St. Elias and the region about Yakutat Bay.

In 1892 he was elected to the chair of Geology in the University of Michigan, filling the vacancy created by the death of Alexander Winchell; and he retained this position for the remainder of his life. As a teacher he concerned himself chiefly with the instruction of undergraduates, reserving a considerable share of his time and energy for other activities. Most of the summers were occupied by geologic field-work, chiefly under the auspices of the United States Geological Survey; and winter leisure was devoted to literary work. A few of the out-of-door studies were in Michigan and near his home, but the greater number were in the mountains and valleys of Washington and Oregon, and one was in the West Indies during the eruption of Pelée. The literary output, in addition to reports on summer work, comprised five semi-popular volumes and a large number of scientific essays.

A few lines will complete the statistical record of his life. He was married in 1886 to Miss J. Augusta Olmsted; and is survived by his wife and family—three daughters and a son. The honorary degree of Doctor of Laws was conferred on him by his alma mater and by the University of Wisconsin. Geographers have signalized his eminence in Alaskan exploration by naming a glacier and a fiord in his honor. He was a member of many professional and learned societies, served as vice-president of the American Association for the Advancement of Science and as president of the Michigan Academy of Science, and at the time of his death was president of the Geological Society of America. He was an associate editor of the *Journal of Geology.* A list of his published writings compiled by the librarian of the University of Michigan comprises 124 entries, to which are added the titles of five unpublished manuscripts. One of the latter—"Concentration as a Geological Principle"—was to have been used, after revision, as his presidential address to the Geological Society. Another, a report on the surface geology of three counties of Michigan, had been transmitted to the state Geologist for publication. Of the published writings seven are books, thirty are treatises of importance or reports of considerable extent, fifty contain minor contributions to scientific knowledge or discussion, and eighteen are to be classed as contributions to the popularization of science.

His more important additions to knowledge are in the fields of descriptive geology, dynamic geology, and physical geography. He described the Newark formation in New Jersey and Virginia, the Quaternary lakes of the northwestern part of the Great Basin, the recent faults and block mountains of part of the same region, and the surface geology or general geology of various areas in Washington, Oregon, Idaho, Utah, Michigan, and Alaska. He wrote on the origin of the red color of certain sedimentary formations. He discussed the nature of massive solid eruptions, and proposed a genetic classification of igneous intrusions. He studied and described glaciers in the Cascade region and Sierra Nevada, and about Mount St. Elias, Yakutat Bay, and Glacier Bay; discussed cirques, and the influence of incorporated débris on glacial flow; and added to the nomenclature of glaciers the now familiar term "piedmont." He treated of the genesis of tundras and the natural history of playas, playa lakes, and playa deposits.

His wide range of first-hand knowledge abundantly qualified him for five works involving extensive compilation, and his simple and attractive literary style made them acceptable to a wide range of readers. Four of these pertain severally to the rivers, lakes, glaciers, and volcanoes of North America, and are called "reading lessons for students of geography and geology;" the fifth is a general treatise on the geography of the continent; and all are recognized as standard works.

Russell was pre-eminently a scientific observer. His best work was in seeing, recording, and discussing the phenomena of a new field. His observation was sharpened by knowledge of existing theories, but not biased by them. He was not a theorist seeking confirmatory facts, but an observer seeking explanations of the thing seen. His contributions to the body of scientific philosophy were many, but were not of the broadest scope, because they were largely restricted to the field of his own observation. His contribution to the body of scientific fact was exceptionally large, primarily because he was keen, energetic, and industrious, but also because he was content with immediate explanations and did not delay publication to search for the broadest generalizations. By promptness in publication he doubtless incorporated some errors of interpretation which might have been avoided by a more conservative practice, but he also enlarged his output of permanently valuable material and avoided the reproach of resultless effort.

In personal character he was of sterling quality, simple and unassuming. His manner was quiet, and he often seemed diffident, although he did not actually lack self-confidence. In lecturing he held his audience rather by the interest of his subject than by vigor of presentation. His conversation was not aggressive, but was distinguished by occasional bits of humor, spontaneous, sudden and peculiarly apt, so that his *bon mot* was not rarely the remembered gem of a social evening. Of medium height and rather slightly framed, his physique gave to the eye little suggestion of that capacity for sustained effort and endurance without which his more strenuous exploration would have been impossible.